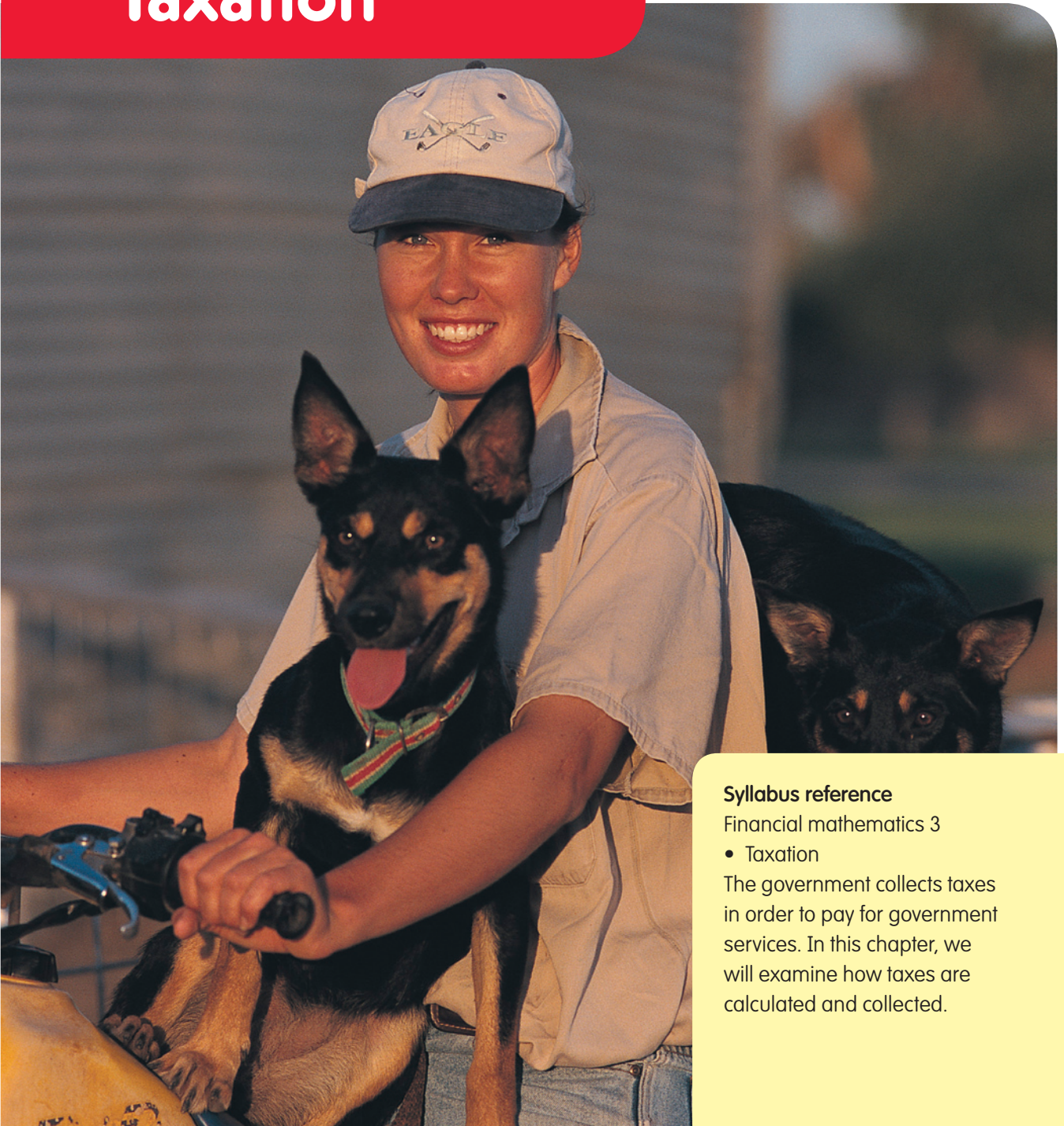


- 12A Calculating allowable deductions
- 12B Taxable income
- 12C Medicare levy
- 12D Calculating tax
- 12E Calculating GST and VAT
- 12F Graphing tax functions

Taxation



Syllabus reference

Financial mathematics 3

- Taxation

The government collects taxes in order to pay for government services. In this chapter, we will examine how taxes are calculated and collected.

ARE YOU READY?

Try the questions below. If you have difficulty with any of them, extra help can be obtained by completing the matching SkillsSHEET. Either click on the SkillsSHEET icon next to the question on the *Maths Quest Preliminary Course* eBookPLUS or ask your teacher for a copy.

eBookplus

Digital doc
SkillsSHEET 12.1
doc-1604
**Finding a
percentage
of a quantity**

Finding a percentage of a quantity

- 1 Find:
- a 42% of \$4900
 - b 48% of \$52 000
 - c 1.5% of \$67 500.

eBookplus

Digital doc
SkillsSHEET 12.2
doc-1605
**Increase or
decrease by
a percentage**

Increase or decrease by a percentage

- 2 Complete the following.
- a Increase \$450 by 10%.
 - b Increase \$750 by 15%.
 - c Decrease \$600 by 12%.
 - d Decrease \$945 by 25%.

eBookplus

Digital doc
SkillsSHEET 12.3
doc-1606
**Writing one
quantity as a
percentage
of another**

Writing one quantity as a percentage of another

- 3 Write:
- a \$45 as a percentage of \$180
 - b \$52.50 as a percentage of \$420
 - c \$135 as a percentage of \$90
 - d \$48 as a percentage of \$750.

eBookplus

Digital doc
SkillsSHEET 12.4
doc-1607
**Unitary
method of
percentages**

Unitary method of percentages

- 4 Find the amount given that:
- a 10% of the amount is \$7.50
 - b 40% of the amount is \$560
 - c 110% of the amount is \$275.

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Digital doc
SkillsSHEET 12.5
doc-1617
**Sketching
straight lines**

Sketching straight lines

- 5 Draw the graph of:
- a $y = 2x + 1$
 - b $y = 4x - 2$
 - c $y = 5 - x$.

The government collects taxes in order to pay for government services. There are several different ways in which the government collects these taxes. The one with which we are most familiar is income tax; however, there are several other forms of tax used by the government to collect money. In this chapter, we look at how taxes are calculated and collected.

In chapter 1, we looked at earning money. We learned that the **gross pay** was the wage or salary paid by the employer. Before the employee receives this money, deductions are taken out. The amount actually received by the worker is called the **net pay**. There may be several payments taken out of a person's gross pay, but for most people the largest deduction is **income tax**.

Everyone who earns over a certain amount must pay income tax. Income tax is paid on an increasing scale, depending on the amount you earn. Most people pay income tax in each pay period. This is called **Pay As You Go tax (PAYG tax)**. At the end of each financial year, which runs from July 1 of one year to June 30 the following year, people who earn income must submit a **tax return**. A tax return is used to calculate the amount of tax that should have been paid and compares this with the amount of PAYG tax paid. The taxpayer then either receives a refund or must pay the amount owing.

The amount of tax paid is calculated using your **taxable income**. Taxable income is your gross pay less any allowable **tax deductions**.

Deductions are allowed for expenses incurred while earning an income. For example, a builder is allowed a tax deduction for the cost of tools or a bank teller who wears a uniform may be allowed a deduction for the dry-cleaning of that uniform. Deductions are also allowed for donations to charity over \$2.

WORKED EXAMPLE 1

A large company employs Ken as a plumber. Ken claims deductions of \$1400 to buy tools, \$25 for gumboots, \$200 for two pairs of work overalls, \$5 per week for dry-cleaning the overalls and \$1.50 per week for work-related telephone calls. Calculate Ken's total deductions.

THINK

- 1 Calculate Ken's total dry-cleaning and telephone deductions.
- 2 Add up all of Ken's deductions.

WRITE

$$\begin{aligned}\text{Dry-cleaning} &= \$5 \times 52 \\ &= \$260\end{aligned}$$

$$\begin{aligned}\text{Telephone} &= \$1.50 \times 52 \\ &= \$78\end{aligned}$$

$$\begin{aligned}\text{Deductions} &= \$1400 + \$25 + \$200 + \$260 + \$78 \\ &= \$1963\end{aligned}$$

People who use their own car for work are entitled to claim a portion of the running costs as a deduction. The amount of the deduction is based on the size of the engine and the number of kilometres travelled. The tax deduction covers the cost of the fuel and a portion of the long-term costs of running a car such as registration, insurance, depreciation and maintenance.

WORKED EXAMPLE 2

Raylene is a computer programmer. As part of her job she uses her own car to travel to visit clients and to attend training seminars. Raylene's car is a 2.4 litre Mitsubishi Lancer, for which she is allowed a deduction of 74 c/km. Calculate the size of the tax deduction in a year where she travels 2547 km on work-related matters.

THINK

Multiply the number of kilometres (2547) by the rate per kilometre (0.519). Be sure to convert the rate in cents to dollars.

WRITE

$$\begin{aligned}\text{Travel deduction} &= 2547 \times 0.74 \\ &= \$1884.78\end{aligned}$$

Tax deductions are also allowed for the depreciation of major equipment. For example, a teacher may own a home computer that is used to prepare lessons and store marks. The computer loses value as it becomes older and so a tax deduction is allowed for this.

WORKED EXAMPLE 3

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int-2332

Worked example 3

Trevor is an accountant who works from home. He owns a personal computer that is used as part of his job. Trevor bought a new computer on 1 July 2010 for \$3200. Each year he is allowed a 33% deduction for the depreciation of the computer. Calculate the tax deduction allowed in:

- a** the 2010–11 financial year
- b** the 2011–12 financial year.

THINK

- a** The depreciation was 33% of the purchase price.
- b**
 - 1** Calculate the value of the computer at the beginning of 2008–09, by subtracting the depreciation from the purchase price.
 - 2** The depreciation was 33% of its value at the end of the last financial year.

WRITE

- a** Tax deduction = 33% of \$3200

$$= 0.33 \times \$3200$$

$$= \$1056$$
- b** Computer value = \$3200 – \$1056

$$= \$2144$$

$$\text{Tax deduction} = 33\% \text{ of } \$2144$$

$$= 0.33 \times \$2144$$

$$= \$707.52$$

Another form of tax deduction comes for the cost of property needed while working. If you run a business from a shop or house, the cost of these premises is tax deductible. This includes expenses such as rent, interest on a loan if buying the property, rates, electricity and telephone. If the business is run from the family home, then a percentage of these expenses is allowed.

WORKED EXAMPLE 4

Wendy runs a confectionery shop in a shopping centre. She pays rent of \$400 per week, has an electricity bill of \$326 per quarter and a telephone bill of \$276 per month. Calculate the deduction that Wendy is entitled to.

THINK

- 1** Calculate the amount of rent that Wendy pays for a year.
- 2** Calculate Wendy's annual electricity bill.
- 3** Calculate Wendy's annual telephone bill.

WRITE

- Rent = $\$400 \times 52$

$$= \$20\,800$$
- Electricity = $\$326 \times 4$

$$= \$1304$$
- Telephone = $\$276 \times 12$

$$= \$3312$$

- 4 Add these expenses to calculate the tax deduction allowed.

$$\begin{aligned}\text{Total tax deduction} &= \$20\,800 + \$1\,304 + \$3\,312 \\ &= \$25\,416\end{aligned}$$



REMEMBER

1. A tax deduction is an amount of money deducted from gross income before tax is calculated.
2. Tax deductions are allowed for work-related expenses as well as other expenses such as charity donations.
3. A tax deduction can be claimed on:
 - (a) the cost of expenses incurred while earning an income
 - (b) travel that is part of your job
 - (c) depreciation of equipment used in performing your job
 - (d) expenses associated with maintaining the premises used for your work
 - (e) miscellaneous other costs.

EXERCISE

12A Calculating allowable deductions

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SKILLSHEET 12.1
doc-1604

Finding
a percentage
of a quantity

eBookplus

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SKILLSHEET 12.2
doc-1605

Increase or
decrease by
a percentage

1 **WE1** Darren is a pest exterminator. He is allowed tax deductions for three sets of protective clothing at \$167.50 each, two pairs of goggles at \$34 each and four face masks at \$13.60 each. He also uses a spray tank costing \$269 and pays \$5 per week to have his clothing professionally cleaned. Calculate Darren's total tax deductions.

2 Jasmine is a dressmaker. Jasmine claims a tax deduction for the cost of her sewing machine (\$560), an overlocker (\$320), needles and cotton (\$134.75) and \$349.80 for dress patterns. Jasmine also claims to make \$5 worth of work-related telephone calls per week. Calculate Jasmine's total tax deductions.



- 3 Kevin works as a waiter. Kevin must wear a white shirt with black pants, belt and bow tie. Kevin buys three shirts at \$45.00 each, two pairs of pants at \$76.90 each, a belt for \$15 and a bow tie for \$14.90. Kevin's uniform must be dry-cleaned each week at a cost of \$5.70. Kevin has other tax deductions of \$345 for union fees, \$60 for having his tax return prepared by an accountant and makes \$50 in charity donations. Calculate Kevin's total tax deductions.
- 4 Matt works as a sports journalist. He claims \$60 per week for telephone calls, \$600 for a pair of binoculars, \$25 per week for admittance to sporting events and \$1250 for travel. Calculate Matt's total tax deductions.
- 5 **WE2** Rajid uses his car as part of his job as an insurance assessor. He has a 1.6 L Nissan Tiida for which he is allowed a deduction of 63 c/km. Calculate the tax deduction Rajid is allowed in a year where he claims 3176 km in work-related travel.
- 6 The table below shows the rate per kilometre allowed as a tax deduction for travel in a private vehicle (for cars using up to 5000 km/year on work-related travel).

Engine capacity	Allowable deduction
Up to 1.6 L	63 c/km
More than 1.6 L and up to 2.6 L	74 c/km
More than 2.6 L	75 c/km

Calculate the total tax deduction allowed for a person who claims:

- a 2000 km in a Mazda-2 with a 1.3 L engine
 b 2645 km in a Toyota Corolla with a 1.8 L engine
 c 1564 km in a Ford Focus with a 2.5 L engine
 d 2900 km in a Holden Commodore with a 3.6 L engine.
- 7 Briony uses her car for work related matters. During the year she changed cars. Briony did 2943 km in her 1.4 litre Mazda 3 before upgrading to a 2.2 litre. She then did 1854 km in the new car. Find the total amount of Briony's tax deduction for travel.
- 8 Calculate the difference in tax deductions allowed for 2700 km of travel between a 1.6 L vehicle and a 2.6 L vehicle.
- 9 **WE3** Bruce is a teacher with a home computer that he purchased for \$2500. If a 40% tax deduction is allowed for depreciation, calculate the tax deduction that Bruce is allowed in:
- a the first financial year
 b the second financial year
 c the third financial year.
- 10 Jeff is a builder. At the end of the 2006–07 financial year Jeff's building equipment was valued at \$12 350. If Jeff is allowed a tax deduction of 25% for depreciation of his equipment, calculate his deduction.
- 11 Mr and Mrs Williams own a farm. Their capital equipment, which includes items such as tractors, trucks etc. is valued at \$75 000 at the beginning of the 2007–08 financial year. Each year they are allowed a 40% tax deduction for depreciation of capital equipment.
- a Calculate the tax deduction allowed for the:
- i 2007–08 financial year
 ii 2008–09 financial year
 iii 2009–10 financial year.



b When the value of the capital equipment falls below \$5000, the entire balance can be tax deducted and the equipment is said to be 'written off'. In what financial year will this occur?

12 Catherine is a fashion designer who uses a computer to assist her with drawing. Catherine buys a new computer on 1 November for \$3600. She therefore owned the computer for only $\frac{8}{12}$ of the financial year. A deduction of 40% p.a. is allowed for depreciation of the computer, but Catherine can claim only $\frac{8}{12}$ of this. Calculate Catherine's allowable tax deduction for the computer.

13 WE4 Gabrielle owns a small boutique in a shopping mall. Her operational expenses are:

- \$325 per week rent
- \$280 per quarter in electricity
- \$185 per quarter in telephone bills.

Calculate the total allowed in tax deductions for running this business.

Further development

14 Greg is a graphic designer who works from home. He has set up one room in the house as his office. In one financial year his household bills are:

- \$4500 in interest on the home mortgage
- \$1200 in council rates
- electricity bills of \$129, \$187, \$165 and \$119
- telephone bills of \$98.50, \$110.60, \$128.30 and \$106.90
- \$378.40 for building and contents insurance.

As Greg's office is 10% of the area of the house, he can claim 10% of all these bills as deductions. Calculate Greg's tax deduction.

15 Henry is a motor mechanic who runs his own garage. Henry has the following work-related expenses:

- \$350 per week for rent on the garage
- \$590 per quarter for the electricity bill
- \$260 per quarter for the telephone bill
- \$75 per month for his mobile telephone plan.

Henry also has \$85 000 in capital equipment that he depreciates at a rate of 27.5% p.a. He travels 2750 km on work-related trips in his van, which has a 3.0 L engine. Calculate Henry's total tax deductions.

16 John has a 2.6 litre car which he uses for work purposes. John does 4850 km travel in his car during the financial year. His total car expenses for the year are \$10 325. He has the choice of using the cents per kilometre method of claiming his tax deduction, or one-third of his total expenses.

- a** Which method should John choose?
- b** What tax deduction will this give John?

17 When travelling more than 5000 km each year, the one-third of all expenses method must be used to calculate the tax deduction. Len has a new Toyota Aurion that cost \$40 000 and is allowed 15% depreciation in his expenses.

- a** Calculate the depreciation that Len is allowed to claim.
- b** If Len's other expenses amount to \$5850 calculate the total amount of Len's tax deduction.

18 Explain what is meant by the term tax deduction.



12B Taxable income

A person's taxable income is the income on which their tax is calculated. Most people have PAYG tax deducted from their wage or salary throughout the year. The amount of PAYG tax deducted each week or fortnight is the amount that would be paid, if this amount was earned each week for the entire financial year.

When calculating the amount of PAYG tax to deduct from an employee's pay, the employer makes no consideration of possible tax deductions or other sources of income.

When a taxpayer completes a tax return at the end of the financial year, the amount of tax that should have been paid is calculated based on their taxable income. Taxable income is the gross income earned from all sources less any tax deductions.

When calculating total income you must include your income from *all* sources. This means that you include any job for which you received payment throughout the year and other incomes such as interest, profits from shares, rental income etc.

WORKED EXAMPLE 5

Michael is a carpet layer who earned a gross pay of \$34 500 during the 2010–11 financial year. Michael also earned \$278.50 for working as a polling officer during a State election and received \$148.63 in interest from his bank accounts. Michael's total tax deductions for the year were \$1846.30. Calculate Michael's taxable income.

THINK

- 1 Calculate the total gross income.
- 2 Calculate the taxable income by subtracting tax deductions from gross income.

WRITE

$$\begin{aligned}\text{Total income} &= \$34\,500 + \$278.50 + \$148.63 \\ &= \$34\,927.13\end{aligned}$$

$$\begin{aligned}\text{Taxable income} &= \$34\,927.13 - \$1846.30 \\ &= \$33\,081.33\end{aligned}$$

In order to calculate a person's taxable income, you may need to calculate their income from a variety of sources and make a number of calculations about tax deductions.

WORKED EXAMPLE 6

Murray works as a full-time jackeroo and plays two evenings per week in a band. Murray earns \$471.52 per week from his full-time job and \$118.53 per week from playing in the band. During the year Murray also earned \$87.52 in interest from his bank accounts.

- a Calculate Murray's total gross income.
- b It is 15 km from the property where Murray works to the club where he plays. When someone has two jobs, the cost of travel between jobs is tax deductible. If Murray is allowed a tax deduction of 45.7 c/km for travel, calculate the travel deduction that he is entitled to claim.
- c If Murray has other tax deductions of \$948.50, calculate his taxable income.

THINK

- a 1 Multiply Murray's weekly earnings in each job by 52 to calculate the yearly total.
- 2 Add the total of each job with the interest earned to calculate total earnings.
- b 1 Calculate the total number of trips made between jobs.

WRITE

$$\begin{aligned}\text{Jackeroo earnings} &= \$471.52 \times 52 \\ &= \$24\,519.04 \\ \text{Band earnings} &= \$118.53 \times 52 \\ &= \$6163.56\end{aligned}$$

$$\begin{aligned}\text{Total earnings} &= \$24\,519.04 + \$6163.56 + \$87.52 \\ &= \$30\,770.12\end{aligned}$$

$$\begin{aligned}\text{Number of trips} &= 2 \times 52 \\ &= 104\end{aligned}$$

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int-2333

Worked example 6

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>2 Calculate the total kilometres travelled.</p> <p>3 Calculate the deduction by multiplying kilometres travelled by the allowable rate.</p> <p>c 1 Calculate the total tax deduction.</p> <p>2 Calculate the taxable income by subtracting the tax deductions from the total income.</p> | <p>$\text{Total km} = 104 \times 15$
$= 1560 \text{ km}$</p> <p>$\text{Travel deduction} = 1560 \times 0.457$
$= \\$712.92$</p> <p>c $\text{Total deduction} = \\$948.50 + \\$712.92$
$= \\$1661.42$</p> <p>$\text{Taxable income} = \\$30\,770.12 - \\$1661.42$
$= \\$29\,108.70$</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

REMEMBER

1. Taxable income is the income on which your tax is calculated.
2. To calculate taxable income, add income from all sources and subtract all tax deductions.

EXERCISE

12B

Taxable income

- 1 **WE5** Fernando earns a gross salary of \$45 900 per year. His tax deductions total \$2145.75. Calculate Fernando's taxable income.
- 2 Tony's gross fortnightly pay is \$649.20.
 - a Calculate Tony's gross yearly pay.
 - b If Tony's tax deductions total \$1142.70, calculate his taxable income.
- 3 During the last financial year Janelle had a gross income of \$45 670 from her job as a physiotherapist. Janelle also earned \$238.79 in interest from her bank accounts. She also had tax deductions totalling \$2340.45. Calculate Janelle's taxable income.
- 4 Paula worked as a receptionist and earned a gross wage of \$418.50 per week. Paula also earned \$45 per week from a second job conducting telephone surveys. Paula had a bank account that paid her \$117.40 in interest.
 - a Calculate Paula's total income.
 - b If Paula had tax deductions totalling \$1956.80, calculate her taxable income.
- 5 Janine has two part-time jobs. For one job she is paid \$196.50 per week and for the other she is paid \$395.60 per fortnight.
 - a Calculate Janine's gross annual income.
 - b If Janine claims tax deductions of \$428.40, calculate her taxable income.
- 6 Tavit is a telephone salesman. He is paid a commission of 5% of all sales. Over the year, Tavit makes sales that total \$850 000.
 - a Calculate the gross commission that Tavit earned.
 - b Tavit makes \$10 worth of phone calls that are tax deductible per day (5 days per week). Calculate the tax deduction that he will claim.
 - c If Tavit has no other tax deductions, calculate his taxable income.
- 7 **WE6** Stefan worked as a hairdresser and earned a gross wage of \$537.90 per week. He also worked part-time at TAFE for a wage of \$112.80 per week. Stefan's income from various investments was \$425.90 for the year.
 - a Calculate Stefan's gross annual income.
 - b Stefan travelled 12 km between the hairdressing salon and TAFE, 80 times during the year. If he is allowed a tax deduction of 74 c/km for travel, calculate the amount that Stefan will claim.
 - c If Stefan has other tax deductions totalling \$1560, calculate Stefan's taxable income.



- 8 **MC** Wayne's gross fortnightly pay is \$1156.60. He has tax deductions of \$5 per week for dry-cleaning his work uniform, \$50 per month in work-related travel expenses and \$348 per year in union dues. Wayne's taxable income is:
A \$28 863.60 **B** \$29 653 **C** \$29 668.60 **D** \$60 143.20
- 9 Garry has a net annual income of \$45 670 after tax deductions of \$7450. Find Garry's gross income.

Further development

- 10 Nicole has a gross income of \$48 730 and a net income of \$34 970. Calculate the amount that Nicole has in tax deductions.
- 11 Andrew earns a gross annual salary of \$65 700. He also earns \$165 per week from a rental property that he owns in Newcastle.
- Calculate Andrew's gross annual income.
 - Andrew travels 320 km to Newcastle and back four times a year to inspect his property and is allowed a tax deduction of 63 c/km. Andrew is also entitled to a deduction of \$1200 for the council rates, \$4325 in interest on his loan for the property and \$287.50 for insurance. Andrew claims \$2340 in other deductions associated with his work. Calculate his total deductions.
 - Calculate Andrew's taxable income.
- 12 Sandra works from home as an editor for a book company. Sandra is paid \$986.50 per fortnight.
- Calculate Sandra's annual gross income.
 - Sandra has one room of her house set up as an office. This room is 15% of the area of the house. If Sandra's total household expenses are \$9800 per year, calculate the deduction that she can claim for her home office.
 - Sandra bought a \$3850 computer. If Sandra claims 40% of this value as a tax deduction for depreciation, calculate the amount claimed.
 - Sandra is allowed to claim travel expenses from her home to the book company's office once a week. If the distance is 50 km and Sandra is allowed a deduction at the rate of 51.9 c/km, calculate the amount that Sandra can claim for a travel deduction.
 - Calculate Sandra's taxable income.
- 13 Georgia earns \$13.40 per hour in her job as a waitress. Georgia works a 38 hour week.
- Calculate Georgia's gross weekly wage.
 - Calculate Georgia's gross annual wage given that she took 4 weeks holiday and was paid a holiday loading of 17.5% during that period.
 - Georgia had tax deductions of \$12 per week for having her uniform cleaned and \$175 for union fees. Calculate Georgia's taxable income.
- 14 Ian is a telephone salesperson who is paid 15% commission on all sales in addition to a \$250 per week retainer.
- Calculate Ian's gross income given that his annual sales are \$185 750.
 - Ian has the following tax deductions, \$120 per week for the telephone, 10% of his household bills of \$8750 for his home office and 780 km in travel at 74 cents per kilometre. Calculate Ian's taxable income.
- 15 Explain what is meant by the terms:
- gross income
 - taxable income.



Computer Application 1 Calculating taxable income

We are going to use a prepared spreadsheet to calculate a person's taxable income.

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EXCEL Spreadsheet
doc-1608
Tax calculator

Taxable Income Calculator			
This spreadsheet calculates a person's taxable income by adding all sources of income and subtracting any tax deductions.			
Income Source	Amount	Deduction For	Amount
		Travel	\$ -
		Home Office	\$ -
		Depreciation	\$ -
		Union Fees	
		Charity Donations	
		Other	
TOTAL :	\$ -	TOTAL :	\$ -
Taxable Income	\$ -		

- From your *Maths Quest General Mathematics Preliminary Course eBookPLUS*, load the spreadsheet 'Tax Calculator'.
Enter the following data for income into Sheet 1, 'Taxable Income':
salary \$44 500, casual work \$1258.50 and interest \$258.50. You should now see a total income of \$46 017.
- The spreadsheet has a section that calculates the size of various deductions. Scroll down to row 23, where you will see calculation areas for travel, home office and depreciation.

Taxable Income Calculator			
This spreadsheet calculates a person's taxable income by adding all sources of income and subtracting any tax deductions.			
Income Source	Amount	Deduction For	Amount
		Travel	\$ -
		Home Office	\$ -
		Depreciation	\$ -
		Union Fees	
		Charity Donations	
		Other	
TOTAL :	\$ -	TOTAL :	\$ -
Taxable Income	\$ -		

Travel Calculator		Home Office Calculator		Depreciation Calculator	
Item	Value	Item	Value	Item	Value
Kilometres Travelled		House Area (sq m)		Computer	40% \$ -
Engine Capacity (L)		Office Area (sq m)		Car	\$ -
Rate of Deduction	0.457			Capital Equipment	25% \$ -
Travel Deduction	\$ -	Interest / Rent		Other	25% \$ -
		Rates			
		Telephone		TOTAL	\$ -
		Electricity			
		Gas			
		Insurance			
		Other			
		TOTAL	\$ -		
		Tax Deduction	\$ -		

- (a) In cell B24 enter 2200 for the kilometres travelled and in B25 enter 3 for the engine capacity of the car.
- (b) We will now do a similar calculation to find the home office deduction. Enter the following data for home office.

Home Office Calculator

House area (m ²)	170
Office area (m ²)	17
Interest/rent	\$4500.00
Rates	\$1150.00
Telephone	\$600.00
Electricity	\$800.00
Gas	
Insurance	\$350.00
Other	

- (c) The final section we will include is a depreciation calculator. Enter the following data for depreciation.

Depreciation Calculator

<u>Item</u>	<u>Value</u>	<u>Rate</u>	<u>Amount</u>
Computer	\$4000	40%	
Car			
Capital equipment	\$5000	25%	
Other	\$500	25%	

3. Scroll up to the top of your spreadsheet. The results appear in the main calculation section. For Union fees enter \$352, for Charity donations enter \$90 and for Other enter \$125. You should now see the total of all allowable deductions and the taxable income.

12C Medicare levy

Medicare is Australia's national health care scheme. As part of our tax, we pay the **Medicare levy**. In return for this, Medicare pays for basic health care services, such as visits to your local doctor, x-rays and pathology.

The basic Medicare levy is 1.5% of taxable income. This is the rate that the majority of people pay. People who are on low incomes do not pay any Medicare levy or pay the levy at a reduced rate.

WORKED EXAMPLE 7

Calculate the Medicare levy for a person with an annual taxable income of \$44 300.

THINK

Calculate 1.5% of \$44 300.

WRITE

$$\begin{aligned}
 \text{Medicare levy} &= 1.5\% \text{ of } \$44\,300 \\
 &= 0.015 \times \$44\,300 \\
 &= \$664.50
 \end{aligned}$$

In Australia the government encourages people to take out private health insurance in addition to Medicare. This is to take the pressure off the public health system. They encourage people to do this in two ways.

1. The government provides a 30% rebate (refund) on the cost of the private health insurance.
2. People on higher incomes who do not have private health insurance are charged the Medicare levy surcharge. This surcharge is a further 1% of taxable income. The income threshold upon which families are charged the Medicare levy surcharge is shown by the table at the top of the opposite page.

Number of dependent children	Surcharge income threshold
0–1	\$100 000
2	\$101 500
3	\$103 000
4	\$104 500
More than 4 dependent children	\$104 500 plus \$1500 for each additional child

For a single person the surcharge applies if their income exceeds \$50 000 per annum.

WORKED EXAMPLE 8

Calculate the total Medicare levy (including surcharge) paid by a person who has two children, no private health insurance and a taxable income of \$164 000 per annum.

THINK

- 1 Calculate the regular Medicare levy.
- 2 Decide if the person must pay the Medicare levy surcharge.
- 3 Calculate the Medicare levy surcharge.
- 4 Calculate the total Medicare levy by adding the surcharge to the regular levy.

WRITE

$$\begin{aligned}\text{Medicare levy} &= 1.5\% \text{ of } \$164\,000 \\ &= 0.015 \times \$164\,000 \\ &= \$2460\end{aligned}$$

This person's income is over the \$101 500 threshold for a person with two children.

$$\begin{aligned}\text{Surcharge} &= 1\% \text{ of } \$164\,000 \\ &= \$1640\end{aligned}$$

$$\begin{aligned}\text{Total Medicare levy} &= \$2460 + \$1640 \\ &= \$4100\end{aligned}$$

REMEMBER

1. The Medicare levy is a payment made as part of our tax that pays for basic health care services.
2. The Medicare levy is 1.5% of taxable income.
3. Allowances are made for people on low incomes who do not have to pay the levy or pay it at a reduced rate.

EXERCISE

12C

Medicare levy

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SkillsSHEET 12.1

doc-1604

Finding a
percentage of
a quantity

- 1 **WE7** Calculate the Medicare levy for a person whose taxable income is \$39 870.
- 2 Calculate the Medicare levy for a person with a taxable income of:
 - a \$43 250
 - b \$56 745
 - c \$94 000.
- 3 Simon has a gross weekly wage of \$451.75.
 - a Calculate Simon's gross annual wage.
 - b Calculate the amount of Medicare levy that Simon pays annually.
- 4 **MC** Which of the following families do not have to pay the Medicare levy surcharge, assuming that none of them have private health insurance?
 - A Income of \$100 000 with no children
 - B Income of \$101 000 with one child
 - C Income of \$102 000 with two children
 - D Income of \$104 000 with four children

- 5 Mr and Mrs Wyatt have five children. What is the threshold for the Medicare levy surcharge for this family?
- 6 **WE8** Calculate the total Medicare levy (including surcharge) paid by a person who has three children, no private health insurance and a taxable income of \$184 000 per annum.
- 7 Calculate the total Medicare levy (including surcharge) paid by a person who has eight children, no private health insurance and a taxable income of \$140 000 per annum.
- 8 James has an annual income of \$250 000 and is single with no children. The cost of private health insurance for James would be \$950 per year. Calculate how much James would save each year by joining a private health fund as opposed to having to pay the Medicare levy surcharge.

Further development

- 9 James pays \$597 in Medicare levy. Calculate his taxable income.
- 10 Tim has a gross income of \$51 000 per year. He does not have private health insurance.
 - a Calculate the Medicare levy that Tim must pay including the 1% surcharge.
 - b Tim is able to find \$1500 in tax deductions. This brings his income below the threshold for the surcharge. Calculate the amount by which the Medicare levy is reduced.
- 11 What is the difference in the Medicare levy between a single person who earns \$49 900 and someone who earns \$50 100?
- 12 Explain what the Medicare levy is.

INVESTIGATE: Medicare levy

- 1 At the time of writing, the Medicare levy was 1.5% of gross income. This is reviewed each year in the federal budget. Find out the current Medicare levy.
- 2 What is the lower income threshold at which no Medicare levy is paid?

12D Calculating tax

The amount of PAYG tax payable is based on a table that shows the annual tax payable in 2008–2009. This annual amount is then divided into a weekly or fortnightly amount.

Taxable income is broken into five tax brackets. As you earn more money the rate of tax increases, as shown in the table below. The table is based on whole dollar amounts and so any cents earned are ignored for the purposes of calculating tax.

Note that we do not round off when ignoring cents; we always round down. For example, a person who earns \$35 956.90 has their tax calculated on \$35 956.

Taxable income	Tax payable
\$1 to \$6000	\$0
\$6001 to \$34 000	15c for each dollar over \$6000
\$34 001 to \$80 000	\$4200 plus 30c for each \$1 over \$34 000
\$80 001 to \$180 000	\$18 000 plus 40c for each \$1 over \$80 000
Over \$180 000	\$58 000 plus 45c for each \$1 over \$180 000

From the 2008–2009 table above we can see that there are five tax brackets.

Bracket 1. People who earn less than \$6000 per year pay no tax.

Bracket 2. People who earn between \$6001 and \$34 000 pay 15c for every dollar over \$6000.

- Bracket 3.** People who earn between \$34 001 and \$80 000 pay \$4200 plus 30c for every dollar over \$34 000.
- Bracket 4.** People who earn between \$80 001 and \$180 000 pay \$18 600 plus 40c for every dollar over \$80 000.
- Bracket 5.** People who earn over \$180 000 pay \$58 600 plus 45c for every dollar over \$180 000.
- To calculate the amount of PAYG tax that should be deducted from a person's income, we need to see what tax bracket they are in and then apply the appropriate rule.

WORKED EXAMPLE 9

Calculate the annual tax payable on a taxable income of \$36 600.

THINK

- 1 \$36 600 is in the \$34 001 to \$80 000 tax bracket.
- 2 Tax payable is \$4200 plus 30c (0.3) for each \$1 over \$30 000.
- 3 Calculate the amount over \$34 000 by subtracting \$34 000 from \$36 600.
- 4 Apply the rule \$4200 plus 30c for each \$1 over \$34 000.
- 5 Calculate.

WRITE

$$\$36\,600 - \$34\,000 = \$2600$$

$$\begin{aligned}\text{Tax payable} &= \$4200 + 0.3 \times \$2600 \\ &= \$4980\end{aligned}$$

When calculating the total amount of tax payable, this income tax must be added to the Medicare levy.

WORKED EXAMPLE 10

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Worked example 10

Christian has a taxable income of \$85 000 per year.

- a Calculate the income tax that Christian must pay.
- b Calculate the Medicare levy for Christian if he is in a private health fund.
- c Calculate Christian's total tax for the year.

THINK

- 1 \$85 000 is in the \$80 001 to \$180 000 tax bracket.
 - 2 Subtract \$80 000 from \$85 000 to calculate the amount over \$80 000.
 - 3 Apply the rule \$18 600 plus 40c for each \$1 over \$80 000.
- b Calculate the Medicare levy as 1.5% of \$85 000.
 - c Add the Medicare levy to the income tax to find the total tax payable.

WRITE

$$\$85\,000 - \$80\,000 = \$5000$$

$$\begin{aligned}\text{Income tax} &= \$18\,000 + 0.4 \times \$5000 \\ &= \$20\,000\end{aligned}$$

$$\begin{aligned}\text{b Medicare levy} &= 1.5\% \text{ of } \$85\,000 \\ &= 0.015 \times \$85\,000 \\ &= \$1275\end{aligned}$$

$$\begin{aligned}\text{c Total tax} &= \$20\,000 + \$1275 \\ &= \$21\,275\end{aligned}$$

When calculating the weekly tax payable, it is assumed that the gross amount earned that week is earned for the whole year, without consideration of tax deductions. The Medicare levy is taken out as part of PAYG tax. The yearly amount of tax is then calculated using this amount, then divided into a weekly payment.

WORKED EXAMPLE 11

Trevor earns a gross wage of \$772.70 per week. Calculate the amount of PAYG tax that is deducted by his employer.

THINK

- 1 Calculate \$772.70 per week as an annual amount by multiplying by 52 (ignore any cents).
- 2 \$40 180 is in the \$30 001 to \$80 000 tax bracket.
- 3 Calculate the amount over \$34 000, by subtracting \$30 000 from \$40 180.
- 4 Apply the rule to calculate the annual tax payable.
- 5 Calculate the Medicare levy as 1.5% of \$40 180.
- 6 Calculate the total tax payable for the year.
- 7 Divide \$7256.70 into weekly instalments, by dividing by 52.

WRITE

$$\$772.70 \text{ per week} = \$40\,180 \text{ per year.}$$

$$\$40\,180 - \$34\,000 = \$6180$$

$$\begin{aligned} \text{Annual tax} &= \$4200 + 0.3 \times \$6180 \\ &= \$6054 \end{aligned}$$

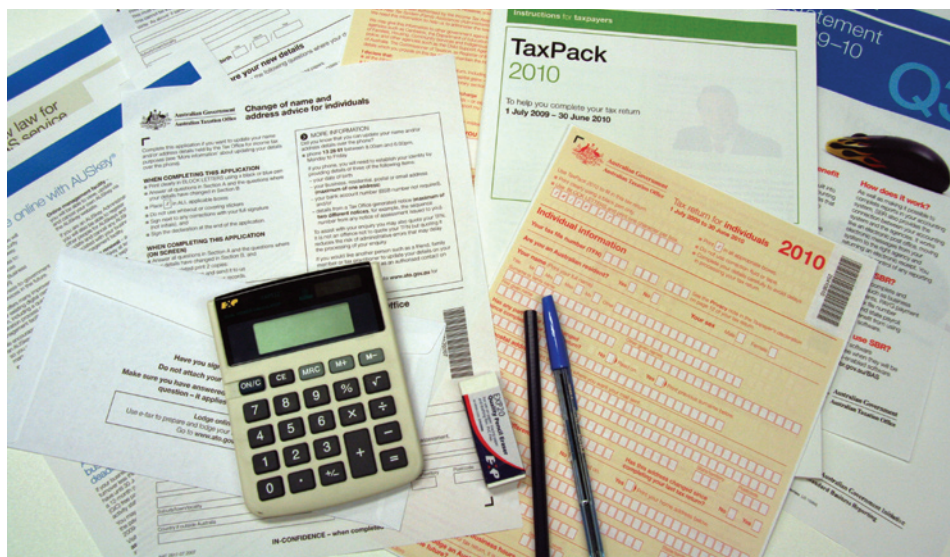
$$\begin{aligned} \text{Medicare levy} &= 1.5\% \text{ of } \$40\,180 \\ &= 0.015 \times \$40\,180 \\ &= \$602.70 \end{aligned}$$

$$\begin{aligned} \text{Total yearly tax} &= \$6054 + \$602.70 \\ &= \$6856.70 \end{aligned}$$

$$\begin{aligned} \text{Weekly tax} &= \$6856.70 \div 52 \\ &= \$131.86 \end{aligned}$$

PAYG tax taken out by an employer is based on the pay being the employee's only source of income without tax deductions. In most cases this means that the amount of tax paid by the end of the year will not be correct. For this reason, every taxpayer must complete a tax return.

Before completing a tax return the taxpayer must collect a **group certificate** from each of their employers. A group certificate is a statement of gross earnings and the amount of PAYG tax that has been deducted from those earnings.



In a tax return, all group certificates are collected to find the total gross income and total PAYG tax already paid. All allowable deductions are then subtracted to calculate taxable

income. The correct amount of tax is then calculated. Based on this calculation, the taxpayer will then either receive a refund or pay the difference.

WORKED EXAMPLE 12

Catherine's gross annual salary as a veterinarian's assistant is \$44 500. She has paid \$8017.50 in PAYG tax. Catherine has also earned \$560.40 in interest from an investment and has tax deductions totalling \$2345.

- a Calculate Catherine's taxable income.
- b Calculate the tax payable on Catherine's taxable income, including the Medicare levy.
- c Calculate the amount that Catherine should receive as a tax refund or the amount of Catherine's tax debt.

THINK

- a
 - 1 Calculate taxable income by adding all incomes and subtracting any tax deductions.
 - 2 Ignore cents in stating the taxable income.
- b
 - 1 \$42 715 is in the \$30 001 to \$80 000 tax bracket.
 - 2 Subtract \$30 000 from \$42 715 to calculate the amount earned over \$30 000.
 - 3 Apply the rule \$3600 plus 30c for each \$1 over \$30 000.
 - 4 Calculate the Medicare levy.
 - 5 Calculate the total tax payable by adding the income tax to the Medicare levy.
- c
 - 1 Catherine has paid more tax than she needed to. So she gets a refund.
 - 2 Calculate the size of the refund by subtracting the amount she should pay (\$8055.23) from the amount that she paid (\$8617.50).
 - 3 Give a written answer.

WRITE

$$\begin{aligned} \text{a Taxable income} &= \$44\,500 + \$560.40 \\ &\quad - \$2345 \\ &= \$42\,715.40 \end{aligned}$$

$$\text{Taxable income} = \$42\,715$$

$$\begin{aligned} \text{b} \quad \$42\,715 - \$34\,000 &= \$8715 \end{aligned}$$

$$\begin{aligned} \text{Income tax} &= \$4200 + 0.3 \times \$8715 \\ &= \$6814.50 \end{aligned}$$

$$\begin{aligned} \text{Medicare levy} &= 1.5\% \text{ of } \$42\,715 \\ &= 0.015 \times \$42\,715 \\ &= \$640.73 \end{aligned}$$

$$\begin{aligned} \text{Total tax} &= \$6814.50 + \$640.73 \\ &= \$7455.23 \end{aligned}$$

$$\begin{aligned} \text{c} \quad \$8017.50 - \$7455.23 &= \$562.27 \end{aligned}$$

Catherine receives a refund of \$562.27.



REMEMBER

1. PAYG tax is the tax calculated based on your weekly or fortnightly earnings ignoring other income sources or tax deductions.
2. At the end of the financial year each taxpayer must complete a tax return, which compares the PAYG tax paid with the correct amount of tax. The taxpayer then either receives a refund or must pay the difference.
3. The rate of tax payable increases with income. The income tax scales are based on tax brackets. To calculate tax, use the tax table to determine the appropriate tax bracket and apply the rule for that bracket.
4. To calculate the total tax payable, the income tax component must be added to the Medicare levy.
5. A refund or tax debt is calculated by finding the difference between the tax that has been paid over the year and the tax that should be paid.

EXERCISE

12D Calculating tax

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doc-1604
Finding a
percentage of
a quantity

- 1 **WE9** Use the income tax table on page 396 to calculate the income tax payable on an annual taxable income of \$35 450.

- 2 Calculate the income tax payable on each of the following taxable incomes.

- | | | |
|-------------------|-------------------|--------------------|
| a \$5500 | b \$18 675 | c \$31 250 |
| d \$44 320 | e \$92 850 | f \$208 000 |

- 3 Julie receives a gross pay of \$627.68 per week.

- a Calculate Julie's gross annual pay (remember to ignore cents).
- b Calculate the annual amount of tax that Julie must pay, based on this amount (remember to ignore cents).

- 4 Gregory earns a gross pay of \$1963.80 per fortnight. Calculate the annual amount of tax that Gregory must pay, based on this amount.

- 5 Brett earns \$860.75 per week.

- a What is the gross annual amount?
- b Calculate the tax payable on that amount.

- 6 **WE10** Johann has an annual taxable income of \$35 600.

- a Calculate the amount of income tax Johann must pay.
- b Johann is married with one child. Calculate the Medicare levy for Johann.
- c Calculate the total amount of tax that Johann must pay for the year.

- 7 For each of the following taxpayers, calculate the total amount of tax that they must pay (assume each must pay the 1.5% Medicare levy).

- a Andre, whose taxable income is \$23 500
- b Brianna, whose taxable income is \$72 000
- c Catelyn, whose taxable income is \$106 000

- 8 Kerry is a television executive who earns \$349 000 per year.

- a What is Kerry's gross weekly pay?
- b What is the annual amount of PAYG tax that Kerry must pay?
- c Calculate Kerry's Medicare levy.
- d Calculate the amount of Kerry's net weekly pay.

- 9 **WE11** Sandy earns a gross weekly pay of \$478.60. Calculate the amount of PAYG tax deducted each week by her employer.

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SkillSHEET 12.4
doc-1607
Unitary
method of
percentages

- 19 Lois has a gross annual income from her job as a journalist of \$78 600.
- Calculate the PAYG tax that Lois should have deducted from her pay over the year.
 - Lois has income of \$400 per week from a property that she rents, but her expenses in running that property total \$23 500 per annum. Calculate Lois' taxable income.
Note: When expenses exceed the income this is called negative gearing
 - Calculate the amount of tax that Lois should pay.
 - Calculate the amount of tax refund that Lois should receive.
- 20 Clark is also a journalist and receives \$68 600 per annum.
- Calculate the PAYG tax that Clark should have deducted from his pay over the year.
 - Clark also has a part time job as a super hero. For this he is paid \$175 per week but has not paid any tax on this amount. Clark has a deduction of 4590 km in travel between jobs at a rate of 75 cents per kilometre. Calculate Clark's taxable income.
 - Calculate the tax that Clark should pay.
 - Calculate the amount of Clark's tax refund or tax debt.
- 21 Jimmy is a photographer and has a gross salary of \$x and has had the correct amount of tax deducted from his fortnightly pay. At the end of the financial year Jimmy has deductions of \$1340 but has earned \$976 in interest from some investments. Explain whether Jimmy will receive a tax refund or have to pay a tax debt.
- 22 Explain what is meant by each of the following terms:
- PAYG tax
 - tax return
 - tax refund.

Computer Application 2 Tax calculation

We are now going to continue our tax calculation spreadsheet. In the previous computer application we used the spreadsheet to calculate a person's taxable income. We will now use it to calculate income tax and the Medicare levy.

- From your *Maths Quest General Mathematics Preliminary Course* ebookPLUS, open the spreadsheet 'Tax Calculator'.

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EXCEL

Spreadsheet

doc-1608

Tax calculator

Tax Calculator [Compatibility Mode] - Microsoft Excel			
This spreadsheet calculates the tax payable and the Medicare levy.			
Taxable Income	\$	41,116.40	
Medicare Levy	\$	616.75	
Income Tax	\$	7,684.80	
TOTAL TAX	\$	8,301.55	
Tax Calculation Section			
Taxable Income		Tax Bracket	
0	6000	\$	-
6001	25000	\$	-
25001	75000	\$	7,684.80
75001	150000	\$	-
150001		\$	-
	Tax Payable	\$	7,684.80

If you saved your information from the taxable income, then the second spreadsheet, 'Income Tax', reads the taxable income and does the appropriate calculations for income tax and the Medicare levy.

2. The formula in cell B7 calculates the Medicare levy by taking 1.5% of the taxable income.
3. The income tax is calculated by making a calculation for the appropriate tax bracket only. This figure is then transferred to the top of the spreadsheet and added with the Medicare levy to calculate the total tax payable.

12E Calculating GST and VAT

When you purchase most items you must pay the GST on that item. GST stands for **Goods and Services Tax**. The GST is a tax amounting to 10% of the purchase price of that item. There are some items that are exempt from the GST. These include fresh food, some educational costs and some medical costs.

The GST is an example of an **indirect tax**. This is because the individual does not pay the tax directly to the government and there is no record kept of who is paying the tax. The tax is collected at the point of sale.

To calculate the amount of GST payable on an item, we simply calculate 10% of the purchase price.

WORKED EXAMPLE 13

A cricket bat has a pre-GST price of \$127.50. Calculate the GST payable on the purchase of the bat.

THINK

Calculate 10% of \$127.50.

WRITE

$$\begin{aligned}\text{GST payable} &= 10\% \text{ of } \$127.50 \\ &= 0.1 \times \$127.50 \\ &= \$12.75\end{aligned}$$

When calculating the amount required to purchase an item, you will need to add the GST to the pre-tax price. The quickest way to do this will be to calculate 110% of the pre-tax price. By using this method we add the 10% GST to 100%, which represents the cost of the item. In this way there is only one calculation to make.

WORKED EXAMPLE 14

The Besenko family goes to McDonald's for lunch. The cost of the meal before GST is \$19.80. How much will the Besenkos have to pay for the meal, including the GST?

THINK

- 1 Calculate 110% of \$19.80.

WRITE

$$\begin{aligned}\text{Total cost} &= 110\% \text{ of } \$19.80 \\ &= 1.1 \times \$19.80 \\ &= \$21.78\end{aligned}$$

- 2 Give a written answer, rounding your answer to the nearest 5c.

The cost of the meal will be \$21.80.

When we are given the total cost of an item including GST, we need to reverse the above process to calculate the pre-tax price of the item. This means that we need to divide the total cost by 110%, written as a decimal.

WORKED EXAMPLE 15

Calculate the pre-tax price of a car that costs \$31 350, including GST.

THINK

- 1 Total cost is 110% of the price.
- 2 Price is total cost divided by 1.1.

WRITE

$$\begin{aligned}\text{Price} &= \$31\,350 \div 1.1 \\ &= \$28\,500\end{aligned}$$

Taxes similar to the GST apply in many countries. These taxes are levied at different percentages in different countries and in many cases are called **value added tax** (VAT). The methods used to calculate the amount of VAT are the same as for Australia's GST; however, the rate must be checked for each question.

WORKED EXAMPLE 16

New Zealand has a VAT levied at a rate of 12.5%. Vanessa goes on holidays to New Zealand and rents a car for five days at a rate of NZ\$56.50 per day (before VAT). Calculate the total cost of renting the car including the VAT.

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int-2335

Worked example 16

THINK

- 1 Calculate the cost of the car by multiplying the daily rate by the number of days.
- 2 Add the VAT by calculating 112.5% of the cost.

WRITE

$$\begin{aligned}\text{Cost} &= \$56.50 \times 5 \\ &= \$282.50\end{aligned}$$

$$\begin{aligned}\text{Total cost} &= 112.5\% \text{ of } \$282.50 \\ &= \$317.81\end{aligned}$$

Note that in other countries there may be 1c and 2c pieces and so we do not take the answer to the nearest 5c.

REMEMBER

1. The GST is a tax of 10% of the purchase price of all items other than a few exemptions.
2. To calculate the amount of GST payable, calculate 10% of the purchase price.
3. To calculate the total cost of an item including the GST, calculate 110% of the pre-tax price.
4. To calculate the price of an item when you are given the total cost including the GST, divide the total cost by 110%.
5. A value added tax (VAT) is a tax similar to the GST that is applied in many countries. The VAT rate varies between countries; however, the same methods of calculation are used as for the GST.

Calculating GST and VAT

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SKILLSHEET 12.1
doc-1604

Finding a
percentage of
a quantity

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SKILLSHEET 12.2
doc-1605

Increase or
decrease by a
percentage

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SKILLSHEET 12.4
doc-1607

Unitary
method of
percentages

- 1 **WE13** Calculate the GST payable on a book that has a pre-tax price of \$35.60.
- 2 Calculate the GST payable on each of the following items (prices given are pre-tax):
 - a a bottle of dishwashing liquid at \$2.30
 - b a basketball at \$68.90
 - c a pair of cargo pants at \$98.50
 - d a bus fare at \$1.30
 - e a restaurant meal for which the bill totals \$89.90.
- 3 Calculate the GST payable on each of the following items (correct to the nearest cent):
 - a a barbecued chicken with a pre-tax price of \$7.99
 - b a tin of shoe polish with a pre-tax price of \$4.81
 - c a tin of dog food with a pre-tax price of 93c
 - d a pack of toilet rolls with a pre-tax price of \$6.25
 - e a pack of frozen pies with a pre-tax price of \$3.36.
- 4 **WE14** A pair of sports shoes that cost \$112.50 has 10% GST added to the cost. Calculate the total cost of the sports shoes.
- 5 Calculate the total cost of each of the following items after the 10% GST has been added (prices given are pre-tax):
 - a a football jersey priced at \$114.90
 - b a CD priced at \$29.90
 - c a bunch of flowers priced at \$14.70
 - d a birthday card priced at \$4.95
 - e a jar of coffee priced at \$5.88.
- 6 Jia travels to New Zealand where the VAT is set at 12.5%. Calculate the amount of tax payable on each of the following items:



- a a camera priced at \$240
- b a bus fare for \$7.50
- c a whitewater rafting tour costing \$376
- d a ski lift ticket costing \$23.50
- e a new suitcase priced at \$78.90.



- 7 WE15** A restaurant bill totals \$108.35 including the 10% GST. Calculate the actual price of the meal before the GST was added.
- 8** A bus fare was \$2.09 including the 10% GST. Calculate:
- the bus fare without the GST
 - how much GST was paid.
- 9 WE16** Austin travels to the USA. In the state of Utah a VAT is levied at 11%. Calculate what Austin will pay for four nights accommodation in a hotel that charges \$78.40 per night before VAT.



- 10** Nancy travels to the USA. In California, the VAT is 7.5% of the price of the item. Calculate what Nancy will pay for each of the following items:
- a postcard that has a ticketed price of \$1
 - Disneyland entry that is \$75
 - two nights accommodation at a hotel for \$89.90 per night
 - a restaurant meal for which the bill totals \$45.78
 - a taxi fare that costs \$6.46.
- 11** Sachin decides to purchase a new car. The pre-tax cost for the basic model of the car is \$30 500. It is an extra \$1200 for an automatic car, an extra \$1600 for airconditioning, \$1000 for power steering, \$600 for a CD player and \$450 for alloy wheels. Calculate the cost of each of the following cars, after the 10% GST has been added:
- the basic model car
 - an automatic car with airconditioning
 - a car with a CD player and alloy wheels
 - a car with all of the above added extras.



Further development

- 12** When overseas tourists leave Australia they are entitled to a refund of GST charged on their purchases. Calculate the amount of GST refund due for purchases totalling \$5674.

- 13** Under a similar arrangement when Australians travel to the UK they are entitled to a refund of the VAT which is levied at 15%. Judy has receipts that total £1856.
- Calculate the amount of Judy's refund in £.
 - Given that £1 = \$A0.45 calculate Judy's refund in \$A.
- 14** Jason has been to the USA where the VAT is levied at different rates in different states. On leaving the USA he has receipts for goods \$US750 where the VAT was levied at 10%, \$US450 where the VAT was levied at 11% and \$US1677 from where the VAT was 7%.
- Calculate the amount of Jason's VAT refund in \$US.
 - Given that \$A1 = \$US0.80 calculate the refund in \$A.
- 15** An alcohol product has a wholesale price of \$23.67. It is then subject to a 35% tax. After this tax a retail mark up of 15% is added before the 10% GST is added. Find the final retail price of the alcohol.
- 16** An item is priced at \$220 on the shelf. Keith says that the 10% GST on the item is \$22, while Maxine says that it is \$20. Who is correct? Explain the reasoning.
- 17** GST stands for Goods and Services Tax. Explain what the difference between a 'Good' and a 'Service' is.

12F Graphing tax functions

We can draw linear graphs to display the tax payable. This is possible for both the GST and income tax.

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Interactivity

int-2404

PAYG tax graph

EXERCISE

12F Graphing tax functions

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SkillsSHEET 12.5

doc-1617

Sketching

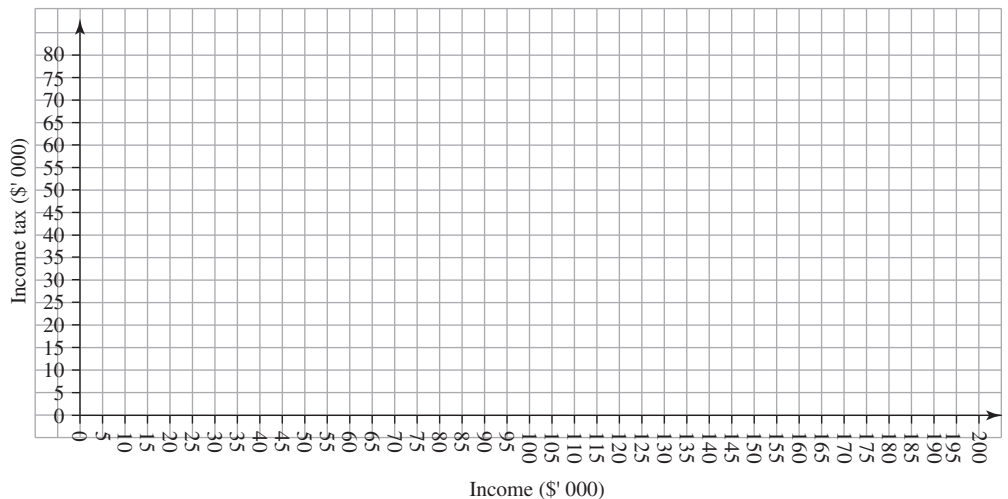
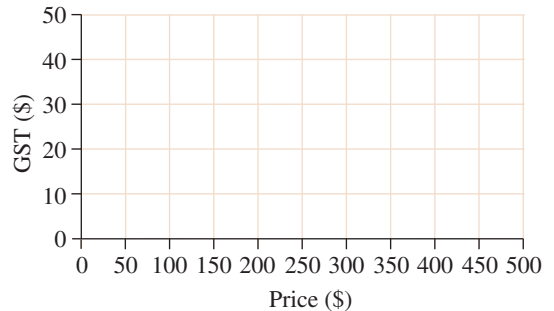
straight

lines

- Draw a set of axes with the price on the horizontal axis and GST on the vertical axis, as shown.

 - Calculate the GST payable on items that cost:
 - \$100
 - \$200
 - \$500.
 - Join these points with a straight line to show the GST function.

- Draw a set of axes with 'Income' on the horizontal axis and 'Income tax' on the vertical axis, as shown below.



a What is the tax payable on gross incomes up to \$6000? Show this on the axes.

b Calculate the tax payable on a gross income of:

- i** \$10 000 **ii** \$34 000.

This is the second tax bracket. Mark these points on the axes and join these points with a straight line.

c Calculate the tax payable on a gross income of:

- i** \$30 000 **ii** \$50 000 **iii** \$80 000.

This is the third tax bracket. Mark these points on the axes and join these points with a straight line.

d Calculate the tax payable on a gross income of:

- i** \$100 000 **ii** \$180 000.

This is the fourth tax bracket. Mark these points on the axes and join these points with a straight line.

e Calculate the tax payable on a gross income of:

- i** \$180 000 **ii** \$190 000 **iii** \$200 000.

This is the fifth tax bracket. Mark these points on the axes and join these points with a straight line.

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WorkSHEET 12.2
doc-1619

Further development

3 A nation has a two-tiered GST system. For the first \$1000 of any item GST is levied at 5% and any amount over \$1000 is levied at 15%.

a Draw a graph of this GST function.

b Find the GST levied on an item costing:

- i** \$450 **ii** \$1000 **iii** \$3250.

c Find the cost of an item for which the GST is:

- i** \$20 **ii** \$100 **iii** \$355.

4 A nation has the following tax system.

Income	Tax
0–\$10 000	Nil
\$10 000–\$50 000	Nil plus 25 cents for every \$1 over \$10 000
Over \$50 000	\$10 000 plus 40 cents for every \$1 over \$50 000

Draw a graph of this taxation system.

SUMMARY

Calculating allowable deductions

- Allowable tax deductions are amounts that are deducted from gross income, as they are not taxable.
- Deductions are allowed for work-related expenses and other items such as charity donations.

Taxable income

- Taxable income is the income on which income tax is assessed.
- Taxable income is calculated by subtracting any allowable deductions from gross income.

Medicare levy

- The Medicare levy is part of the tax system that funds basic health care services.
- For most people the Medicare levy is 1.5% of gross income.
- People on low incomes either pay no Medicare levy or pay it at a reduced rate.
- People on high incomes with no private health insurance must pay a Medicare levy surcharge of an extra 1% of taxable income.

Calculating tax

- Pay As You Go (PAYG) tax is deducted from your gross pay each week or fortnight.
- Tax is calculated on the taxpayer's gross annual income. This is then divided into weekly or fortnightly amounts.
- At the end of the financial year the taxpayer submits a tax return.
- In a tax return the correct amount of tax for the year is calculated. The taxpayer then either receives a tax refund or pays a tax debt.

Calculating GST and VAT

- The most common indirect tax is the GST, which began in Australia on 1 July 2000.
- The GST is a 10% tax paid on the cost of all goods and services with the exception of some basic foods.
- Some other countries have a value added tax (VAT), which is similar to the GST but levied at different rates.

CHAPTER REVIEW

MULTIPLE CHOICE

- 1 **MC** Slavisa is a nurse with a gross annual income of \$45 675. He has earned \$136.50 in interest from his bank accounts and has allowable deductions of \$680. Slavisa's taxable income is:
A \$44 858.50 **B** \$45 131.50
C \$46 218.50 **D** \$46 491.50
- 2 **MC** Allan's taxable income is \$48 000. Allan's tax for the year is (use the PAYG tax table on page 000 (including medicare levy)):
A \$720 **B** \$4200
C \$8400 **D** \$9120
- 3 **MC** Bradley receives a bill for \$489.50 for car repairs, which includes GST. The cost of the repairs without the tax was:
A \$440.55 **B** \$445.00
C \$489.50 **D** \$538.45

SHORT ANSWER

- 1 Tony is employed as a motor mechanic. Tony claims deductions of \$1800 to buy tools, \$225 for three pairs of work overalls, \$5 per week for dry-cleaning of these overalls and \$2.50 per week for work-related telephone calls. Calculate Tony's total tax deductions.
- 2 Catherine is a computer consultant who uses her own vehicle for work. Each week she must make several visits to businesses that use her computer systems. Catherine travelled 4523 km on work-related trips during the year. Calculate the tax deduction that Catherine can claim if she is entitled to claim at the rate of 63c per kilometre.
- 3 Brian runs a small bakery and has equipment in his bakery to the value of \$45 000 at the beginning of the 2006–07 financial year. For tax purposes he depreciates these items at a rate of 28% p.a. Calculate the tax deduction that Brian can claim for depreciation in:
a 2007–08 **b** 2008–09 **c** 2009–10.
- 4 If a \$5000 computer can be depreciated at a rate of 33% p.a., how many years will it take for its value to fall below \$500?
- 5 Verity is employed as a vet. Verity has the following tax deductions.
 - \$1500 for appropriate clothing
 - \$5 per week for dry-cleaning
 - \$2590 for new equipment
 - 28% depreciation on major equipment currently valued at \$65 000
 - 3287 km in travelling expenses (at a rate of 74 c/km)
 - \$127.45 per month in telephone calls
 - \$318 per quarter for electricityCalculate Verity's total tax deductions.
- 6 Eddie has a gross annual salary of \$46 000 and has tax deductions that total \$2117. Calculate Eddie's taxable income.
- 7 From her job as a journalist, Jana earns a gross annual salary of \$72 000. Jana also earns \$3540 per year from her investments. If Jana has tax deductions totalling \$5120, calculate her taxable income.
- 8 Allison's gross weekly wage is \$539.50. Allison also earned \$107.40 per quarter in interest from a fixed term deposit. Calculate:
 - a** Allison's total earnings for the year
 - b** Allison's taxable income, given that she had deductions that total \$2018.
- 9 Raymond has two jobs. One earns him \$938.50 per fortnight and the other \$190.60 per week. He also earned \$97.10 in interest throughout the year.
 - a** Calculate Raymond's gross annual income.
 - b** In travelling between jobs, Raymond made 104 trips at 23 km per trip. For this he was entitled to claim a tax deduction at the rate of 63 c/km. Raymond had other tax deductions totalling \$950. Calculate Raymond's taxable income for the year.
- 10 The Medicare levy is paid at a rate of 1.5% of taxable income. Calculate the Medicare levy that must be paid by a person whose taxable income is \$39 000 per year.
- 11 Calculate the amount of Medicare levy that is payable by each of the people below.
 - a** Tanya has a taxable income of \$15 500.
 - b** Sam has a taxable income of \$29 000.
 - c** Emma has a taxable income of \$47 500.
 - d** Gavin has a taxable income of \$83 507 and is in a private health fund.
 - e** Holly has a taxable income of \$99 000 and is in a private health fund.

- 12** Use the table on page 395 to determine the Medicare levy paid by a family with 3 children, no private health insurance and a taxable income of:
a \$87 600 **b** \$101 000 **c** \$156 000.
- 13** Use the tax table on page 396 to calculate the tax payable on a taxable income of \$44 500.
- 14** Use the tax table on page 396 to calculate the tax payable on an income of:
a \$5000 **b** \$19 357
c \$35 670 **d** \$89 562
e \$278 000.
- 15** Brett earns a gross weekly wage of \$653.60.
a Calculate Brett's gross annual pay.
b Calculate annual tax that would be payable on this annual amount.
c Calculate the Medicare levy payable on this annual amount.
d Calculate the total annual tax payable.
e Calculate the weekly PAYG tax that would be deducted from Brett's wages.
- 16** Fiona has a gross fortnightly salary of \$3367.90. Calculate the amount of PAYG tax that would be deducted from Fiona's pay each fortnight.
- 17** Neville has a gross annual salary of \$43 750. He has tax deductions totalling \$3495. During the year Neville has had \$7781.25 deducted in PAYG tax.
a Calculate Neville's taxable income.
b Calculate the total tax payable on this amount, including the Medicare levy.
c Calculate the tax refund that Neville should receive.
- 18** An electric guitar has a pre-tax price of \$990. Calculate the amount of GST payable on the guitar.
- 19** Calculate the amount of GST payable on each of the following items (prices given are pre-tax):
a a takeaway meal at \$11.30
b a lawnmower at \$369.00
c a bus fare costing \$1.20
d a hair style priced at \$37.50
e a \$12.50 movie ticket.
- 20** A round of golf costs \$20 before tax. Calculate the total cost of the game after the 10% GST is added.
- 21** The total cost of a restaurant meal was \$123.75, including GST. Calculate the actual cost of the meal without the tax.

EXTENDED RESPONSE

- 1** Lleyton is employed as a forklift driver and receives a gross weekly wage of \$970.
a Calculate Lleyton's gross annual wage.
b If Lleyton has tax deductions totalling \$1194 and has earned \$75.80 from other sources, calculate Lleyton's taxable income.
c Calculate the Medicare levy for Lleyton.
d Use the table on page 396 to calculate the income tax due for Lleyton.
e If Lleyton's employer has deducted \$4483.20 in PAYG tax through the year, calculate Lleyton's tax refund or tax debt.
- 2** Vicky goes to a travel agent to enquire about a holiday in New Zealand. The cost of accommodation in a New Zealand hotel is A\$75 per night.
a If Vicky books this at the travel agent she must pay the 10% GST on the cost of the accommodation. Calculate the total cost of four nights in Australian dollars.
b If Vicky flies to New Zealand and books the hotel on arrival, the cost is NZ\$80 per night. If there is a 12.5% VAT on the hotel room, calculate the total cost of four nights in New Zealand dollars.
c A\$1 = NZ\$1.12. What is the cheapest way to book the accommodation and by how much is it cheaper?

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Chapter 12

Are you ready?**Digital docs** (page 384)

- SkillsSHEET 12.1 (doc-1604): Finding a percentage of a quantity
- SkillsSHEET 12.2 (doc-1605): Increase or decrease by a percentage
- SkillsSHEET 12.3 (doc-1606): Writing one quantity as a percentage of another
- SkillsSHEET 12.4 (doc-1607): Unitary method of percentages
- SkillsSHEET 12.5 (doc-1617): Sketching straight lines

12A Calculating allowable deductions**Tutorial**

- **WE3** int-2332: Learn how to calculate tax deductions. (page 386)

Digital docs

- SkillsSHEET 12.1 (doc-1604): Finding a percentage of a quantity (page 387)
- SkillsSHEET 12.2 (doc-1605): Increase or decrease by a percentage (page 387)
- SkillsSHEET 12.3 (doc-1606): Writing one quantity as a percentage of another (page 388)
- SkillsSHEET 12.4 (doc-1607): Unitary method of percentages (page 388)

12B Taxable income**Tutorial**

- **WE6** int-2333: Learn how to calculate gross income and taxable income. (page 390)

Digital docs

- Spreadsheet (doc-1608): Tax calculator (page 393)

12C Medicare levy**Digital docs**

- SkillsSHEET 12.1 (doc-1604): Finding a percentage of a quantity (page 395)
- SkillsSHEET 12.4 (doc-1607): Unitary method of percentages (page 396)
- WorkSHEET 12.1 (doc-1611): Answer questions involving tax calculations. (page 396)

12D Calculating tax**Tutorial**

- **WE10** int-2334: Calculate tax amounts involving the Medicare levy. (page 397)

Digital docs

- SkillsSHEET 12.1 (doc-1604): Finding a percentage of a quantity (page 400)
- SkillsSHEET 12.4 (doc-1607): Unitary method of percentages (page 400)
- Spreadsheet (doc-1608): Tax calculator (page 402)

12E Calculating GST and VAT**Tutorial**

- **WE16** int-2335: Calculate the cost of renting a car including the VAT. (page 404)

Digital docs

- SkillsSHEET 12.1 (doc-1604): Finding a percentage of a quantity (page 405)
- SkillsSHEET 12.2 (doc-1605): Increase or decrease by a percentage (page 405)
- SkillsSHEET 12.4 (doc-1607): Unitary method of percentages (page 405)

12F Graphing tax functions**Interactivity**

- int-2404: PAYG tax graph (page 407)

Digital docs

- SkillsSHEET 12.5 (doc-1617): Sketching straight lines (page 407)
- WorkSHEET 12.2 (doc-1619): Answer questions about taxation. (page 408)

Chapter review

- Test yourself Chapter 12 (doc-1620): Take the end-of-chapter test to test your progress. (page 411)

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